Title	Production of Autoinducer-2 in *Escherichia coli* 0157:H7 Inoculated Fresh Beef or Purge and Interaction with Level of Natural Flora
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Citation	Program and Abstract Book, IAFP 2005 (International Association for Food Protection) - 92nd Annul Meeting, 14-17 August 2005, Baltimore, Maryland, USA. 256 pages.
Keyword	beef; Escherichia coli; natural flora

Abstract

This study examined factors that may affect production of autoinducer-2 (furanosyl borate diester; AI-2) by *Escherichia coli* 0157:H7 in fresh beef or purge. Beef strips (4x4x1 cm) were prepared to contain low (LNB; 0.7 log CFU/cm^2 ; cut after dipping inside rounds in 85°c water) or high (HNB; 3.0 log CFU/cm^2; no dipping) levels of natural flora, while meat purge samples were prepared by filtering (0.45 μm; LNP) or without filtering (HNP). Two levels (2 or 6 log CFU/cm^2 [beef strips] or ml [purge]) of *E. coli* 0157:H7 ATCC43895 were inoculated in samples. Inoculated beef strips were stored aerobically or in vacuum packages and purge samples were stored statically at 4, 10 or 25°C for 21, 18 and 9 days, respectively. Relative AI-2 activity, as a potential indicator of quorum sensing, was determined using the luminescence-based reporter strain *Vibrio harveri* BB170, and bacterial populations were determined on tryptic soy agar and sorbitol McConkey agar supplemented with cefixime and potassium tellurite during storage. AI-2 activity was produced earlier and to higher levels in inoculated purge than in beef. In general, *E. coli* 0157:H7 showed higher relative AI-2 activity in LNP than in HNP at 10 and 25°C. Also, *E. coli* 0157:H7 showed higher relative AI-2 activity in LNB than in HNB, but only at 25°C. Aerobically stored beef slices had higher relative AI-2 activity than those stored anaerobically at 25°C. The results of this study indicated that AI-2 production by *E. coli* 0157:H7 depends on levels of natural flora, presence of oxygen, substrate composition, and storage temperature.